



067-1002-99
POWER SUPPLY
CALIBRATION FIXTURE
(for Universal Load Unit)
INSTRUCTION MANUAL

Tektronix, Inc.
P.O. Box 500
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MANUAL PART NO.
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MANUAL REVISION STATUS

PRODUCT: 067-1002-99 Calibration Fixture

This manual supports the following versions of this product: 067-1002-99

REV.	DATE	DESCRIPTION
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WARNING

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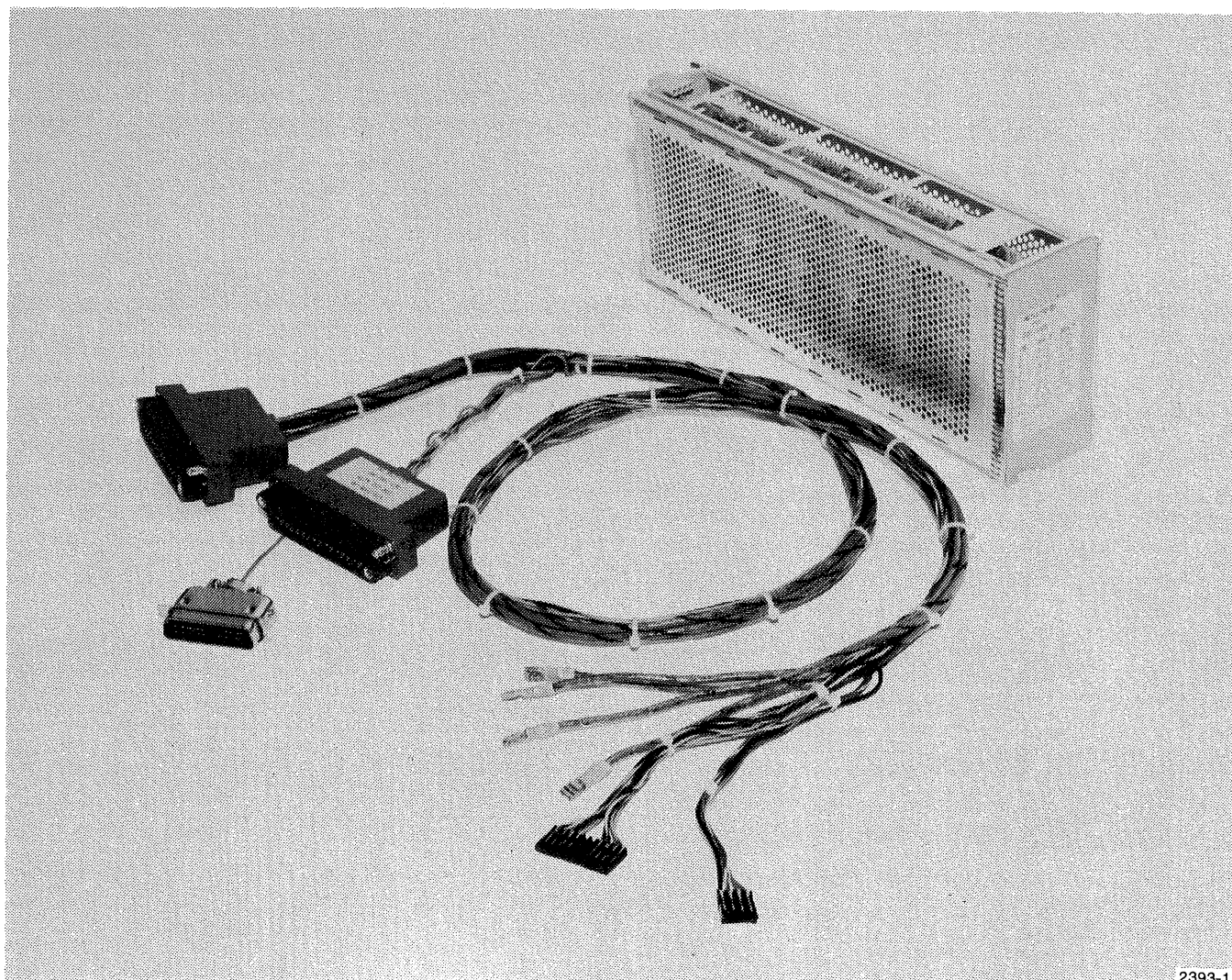
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Figure 1-1. The 067-1002-99 Calibration Fixture.

Section 1

INTRODUCTION

ABOUT THIS MANUAL

This manual describes the 067-1002-99 Calibration Fixture (Figure 1-1) and its use in servicing of the 620-0295-00 Low Voltage Power Supply. The manual includes:

- Specifications
- Cable and schematic diagrams
- Parts list
- The performance check procedure for the power supply.

The following documents contain related information:

- 067-0883-99 Universal Load Unit Instruction Manual. Refer to this manual for general operating instructions and for the calibration fixture (plug-in) theory of operation.
- 620-0295-00 Low Voltage Power Supply Service Manual. Refer to this manual for power supply schematics, parts lists, maintenance procedures, and theory of operation. The Maintenance section contains a procedure to bring up supplies which are not operating properly or which have been repaired. The manual also contains an abbreviated performance check procedure for use in the field.

NOTE

When a Universal Load Unit is available, the performance check procedure in this manual should be used in preference to the procedure in the power supply service manual.

INTRODUCTION

- The service manual for the product in which the power supply is installed. To adjust the power supply, refer to the adjustment procedure in this manual.

DESCRIPTION OF THE MODULE

The calibration fixture includes two assemblies:

- A personality plug-in for the TEKTRONIX Universal Load Unit
- A cable harness

The plug-in assembly consists of a metal framework enclosing a circuit board. An edge connector at the rear of the board connects it with the load unit. The circuit board includes a set of resistors which program two load levels for each channel. These resistors were selected in accordance with equations given in the appendix to the load unit instruction manual.

A chart on the front of the plug-in lists the voltage range for each supply. Channels 1 and 2 are connected in parallel to the +5 V supply, and Channels 5 and 6 are connected in parallel to the +55 V supply.

The cable assembly connects the load unit to the power supply under test.

Section 2
SPECIFICATIONS

PHYSICAL

Table 2-1 gives the physical characteristics of the calibration fixture.

Table 2-1

PHYSICAL SPECIFICATION

Characteristic	Information
Module:	
Size	Fits Universal Load Unit plug-in compartment
Weight	1.25 lbs (570 gm)
Cable:	
Length	Approximately 5 ft (1.5 m)

SPECIFICATIONS

ELECTRICAL

Table 2-2 gives the specifications for each load unit channel. The following definitions explain the column headings.

Characteristic: Property of equipment.

Performance Requirement: A statement that defines a characteristic in quantitative terms of performance, usually in limit form.

Supplemental Information: Statements that explain performance requirements or that provide reference information.

The performance requirements are valid only within the following environmental limits:

- The calibration fixture is properly seated in a properly functioning TEKTRONIX 067-0883-99 Universal Load Unit (ULU).
- The ULU is operating within its specified environmental limits.

Table 2-2
ELECTRICAL SPECIFICATION

Characteristic	Performance Requirement	Supplemental Information
Channel 1 ^a		
Voltage	+5 V	
Low load	<1.57 A	Resistance mode
High load	18 A ^b	Current mode
Out-of-regulation tolerance		--
Channel 2 ^a		
Voltage	+5 V	
Low load	<1.43 A	Resistance mode
High load	12 A	Current mode
Out-of-regulation tolerance ^c		10 %

^aChannels 1 and 2 operate in parallel to provide a maximum load of 30 A.

^bHigh loads are nominal values measured at the ULU.

^cDeviation beyond this tolerance turns on the out-of-regulation LED on the ULU. The percentage is substantially greater than the regulation specified for the power supply (refer to the power supply service manual).

SPECIFICATIONS

Table 2-2 (cont)

Characteristic	Performance Requirement	Supplemental Information
Channel 3		
Voltage	+12 V	
Low load	<250 mA	Resistance mode
High load	4 A	Current mode
Out-of-regulation tolerance		10 %
Channel 4		
Voltage	+24 V	
Low load	<150 mA	Resistance mode
High load	1.8 A	Current mode
Out-of-regulation tolerance		10 %
Channel 5 ^d		
Voltage	+55 V	
Low load	<102 mA	Resistance mode
High load	500 mA	Current mode
Out-of-regulation tolerance		7 %

^d Channels 5 and 6 operate in parallel to provide a maximum load of 1.25 A.

Table 2-2 (cont)

Characteristic	Performance Requirement	Supplemental Information
Channel 6 ^d		
Voltage	+55 V	
Low load	<150 mA	Resistance mode
High load	750 mA	Current mode
Out-of-regulation tolerance		--
Channel 7		
Not used		
Channel 8		
Not used		
Channel 9		
Not used		
Channel 10		
Voltage	-5.2 V	
Low load	<500 mA	Resistance mode
High load	4 A	Current mode
Out-of-regulation tolerance		10 %

^dChannels 5 and 6 operate in parallel to provide a maximum load of 1.25 A.

SPECIFICATIONS

Table 2-2 (cont)

Characteristic	Performance Requirement	Supplemental Information
Channel 11		
Voltage	-12 V	
Low load	<130 mA	Resistance mode
High load	1 A	Current mode
Out-of-regulation tolerance		10 %
Channel 12		
Not used		
Channel 13		
Not used		

ENVIRONMENTAL

Refer to the specifications for the 067-0883-99 Universal Load Unit.

CABLE

Table 2-3 describes the cable which connects the ULU to the power supply under test.

Table 2-3
INTERCONNECT CABLE PIN-OUT

ULU		Power Supply	
Pin	Assignment	Pin	Assignment
J1 13-14	Channel 10	J73 9-10	-5.2 V supply
J1 15	Channel 11	J73 8	-12 V supply
J2 1-10	Channels 1, 2	J72	+5 V supply
J2 11-12	Channel 3	J73 1-2	+12 V supply
J2 13-14	Channel 4	J74 2-3	+24 V supply
J2 15-16	Channels 5, 6	J74 4	+55 V supply
J1 29-31, J2 17-32	Return for all channels	J71, J73 3, J73 7, J74 1	+5 return Ground sense GND GND
J3 2	Channel 2 sense	J73 4	+5 V SENSE

Section 3

POWER SUPPLY PERFORMANCE CHECK

SAFETY SUMMARY

WARNING

The VDE Filter, Line Voltage Selector, and Inverter boards are connected directly to the AC lines. To avoid injury by electrical shock an isolation transformer should be used during servicing of these boards.

Do Not Service Alone

Do not perform service or adjustment of the power supply unless another person capable of rendering first aid and resuscitation is present.

Wear Safety Glasses

Some internal fault conditions may cause the switching transistors or other primary components to explode. To avoid injury to your eyes wear safety glasses while servicing the power supply.

Use Care When Servicing With Power On

Dangerous voltages exist at several points in the power supply. To avoid personal injury do not touch exposed connections or components while the power is on.

Disconnect power before removing protective panels, soldering, or replacing components.

After the power has been disconnected, the neon flasher on the Inverter board indicates that dangerous voltages still are present in the filter capacitors.

PERFORMANCE CHECK

Power Source

The power supply is intended to operate from a power source that does not apply more than 250 volts rms between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

GENERAL

The procedures in this section compare the performance of a power supply with the electrical requirements given in the Specification section of the power supply service manual. The conditions listed in that section must be met in order for the electrical requirements to be valid.

These procedures are for use on supplies which appear to be operating properly. For troubleshooting assistance or to bring up supplies which have been repaired, refer to the Maintenance section in the power supply service manual.

If the performance on any test does not meet the requirement and cannot be adjusted, repair the power supply and repeat the entire performance check.

EQUIPMENT REQUIRED

- TEKTRONIX 465 dual trace oscilloscope (or equivalent) and matching BNC to BNC cable (unterminated) or probe tip adapter and 1X probe. (A storage oscilloscope is helpful in checking the INIT-0 and PWRFL-0 waveforms.)
- TEKTRONIX 067-0883-99 Universal Load Unit (ULU).
- TEKTRONIX 067-1002-99 Calibration Fixture.
- Isolation transformer.
- Variable autotransformer capable of at least 6 A at 115 V or 3 A at 230 V, output variable from at least 90 to 132 V or 180 to 264 V.
- AC voltmeter, $\pm 5\%$ from 90 to 132 V or 180 to 264 V (may be part of autotransformer).
- Remote switch with five-pin harmonica connector (Figure 3-1) to fit J63. (A two-pin jumper may be substituted.)
- Flat blade 1/8-inch screwdriver.

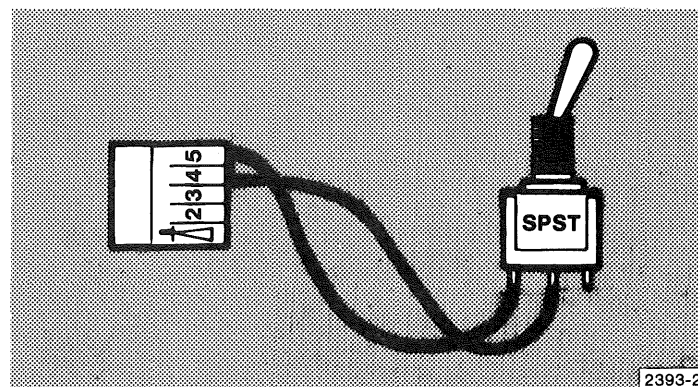


Figure 3-1. Remote Switch.

PERFORMANCE CHECK

PREPARATION

This section describes connection of the equipment shown in the performance check set-up diagram, Figure 3-2.

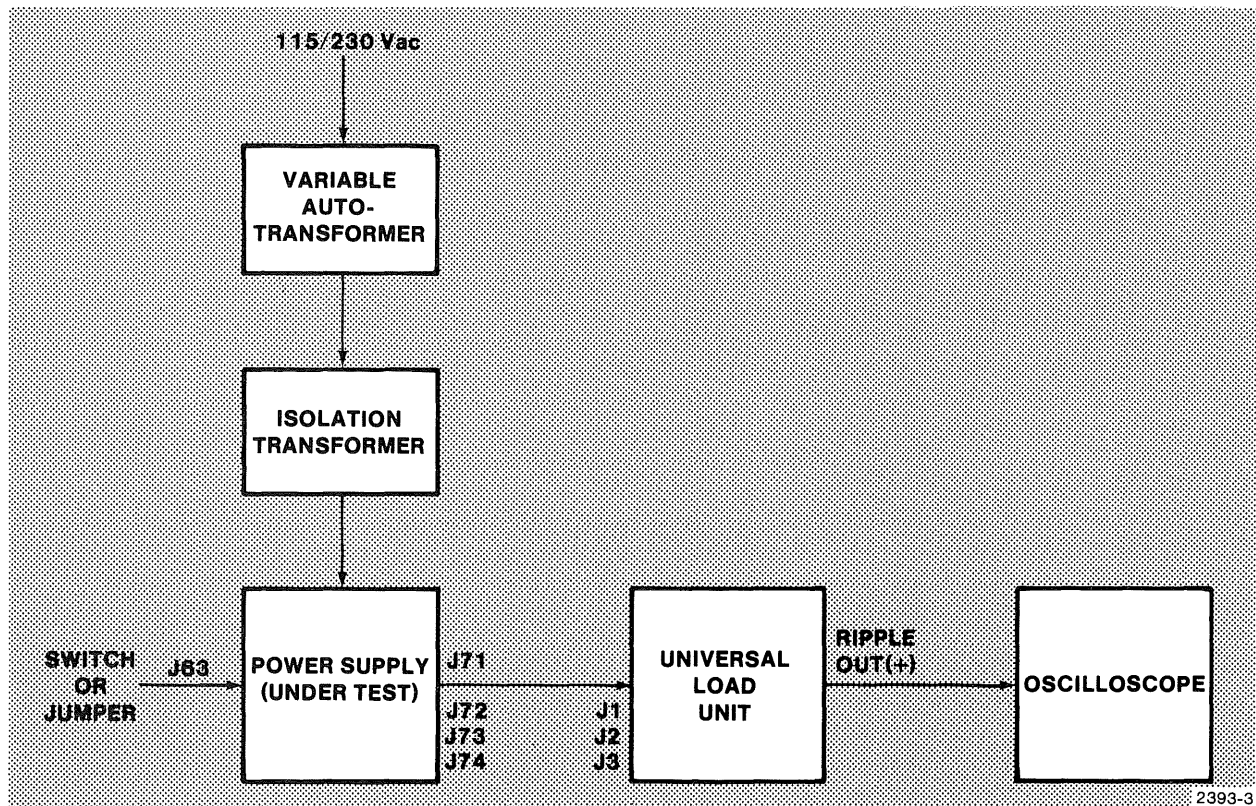


Figure 3-2. Performance Check Set-Up.

1. Remove the power supply from the product.
2. Turn off AC power to the ULU by using its rear panel rocker switch.
3. Connect the autotransformer to the isolation transformer. Leave the power off.
4. Connect the power supply to the autotransformer. Leave the power off.
5. Install the 067-1002-99 Calibration Fixture into the front panel compartment of the ULU.
6. Connect the cable harness to the three connectors on the rear panel of the ULU. These connectors are keyed to avoid improper connection.

PERFORMANCE CHECK

7. Connect other end of the cable harness to the Regulator board on the power supply (see Figure 3-3):
 - a. Connect the 10-pin harmonica to J73.
 - b. Connect the 4-pin harmonica to J74.
 - c. Connect the spade lugs on the four GRAY-BLACK wires to J71 (5 RTN).
 - d. Connect the spade lugs on the four GRAY-RED wires to J72 (+5V).
8. Connect the remote switch to J63 on the power supply Inverter board. Leave the switch off.

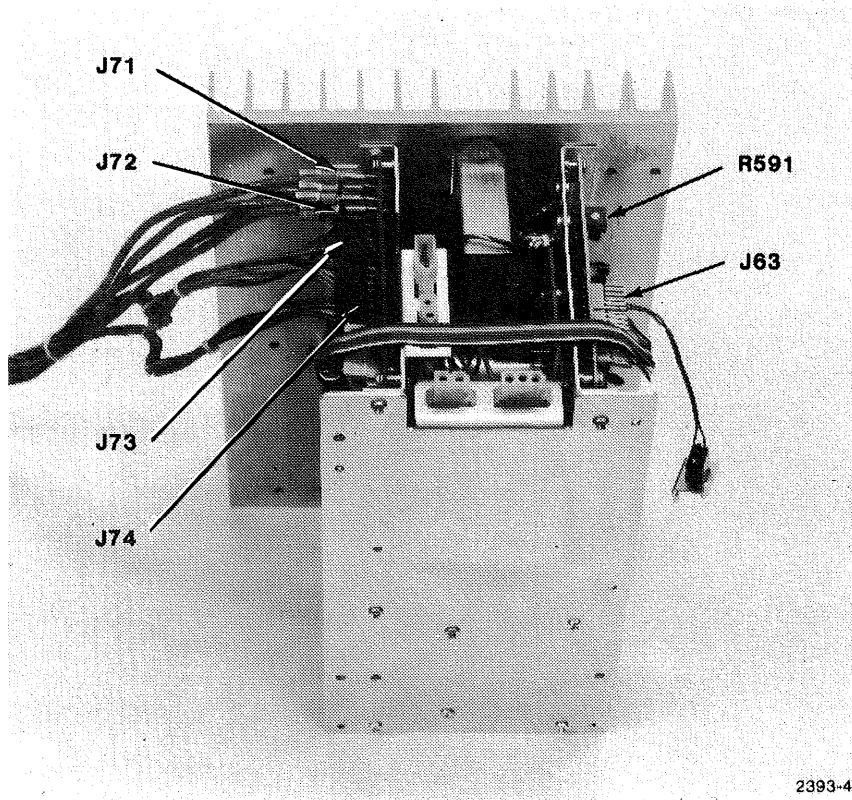


Figure 3-3. Connecting the Load Unit to the Power Supply.

PROCEDURES**DC Supplies**

This procedure checks the voltage levels, maximum current, and current limiting point for each portion of the supply. Table 3-1 summarizes the steps.

NOTE

The ripple figures given in this procedure are not performance requirements. They are provided solely for the information of the service person.

1. Set the ULU controls as follows:

MAX/MIN Switches 1 to 12	MIN
LOAD SELECT	IND and SWITCHED
VOLTAGE/CURRENT	VOLTAGE
CURRENT ADJUST	Midrange and "in"
OVER VOLTAGE TEST	OFF

PERFORMANCE CHECK

2. Set up the oscilloscope:

- a. Connect Channel 1 between C476 and Pin 3 of U575 (Figure 3-4).
- b. Connect Channel 2 to RIPPLE OUT (+) on the ULU, using an unterminated BNC cable or a 1X probe and adapter.
- c. Set the controls as follows:

TIME/DIV	10 μ S
VERT MODE	CH 2
CH 1 VOLTS/DIV	2 V
CH 1 COUPLING	DC
CH 2 VOLTS/DIV	10 mV
CH 2 COUPLING	DC
TRIGGER SOURCE	CH 1
TRIGGER COUPLING	AC
TRIGGER MODE	AUTO
TRIGGER SLOPE	+
TRIGGER LEVEL	Midrange
20 MHz BANDWIDTH (if available)	Activated (pull out)

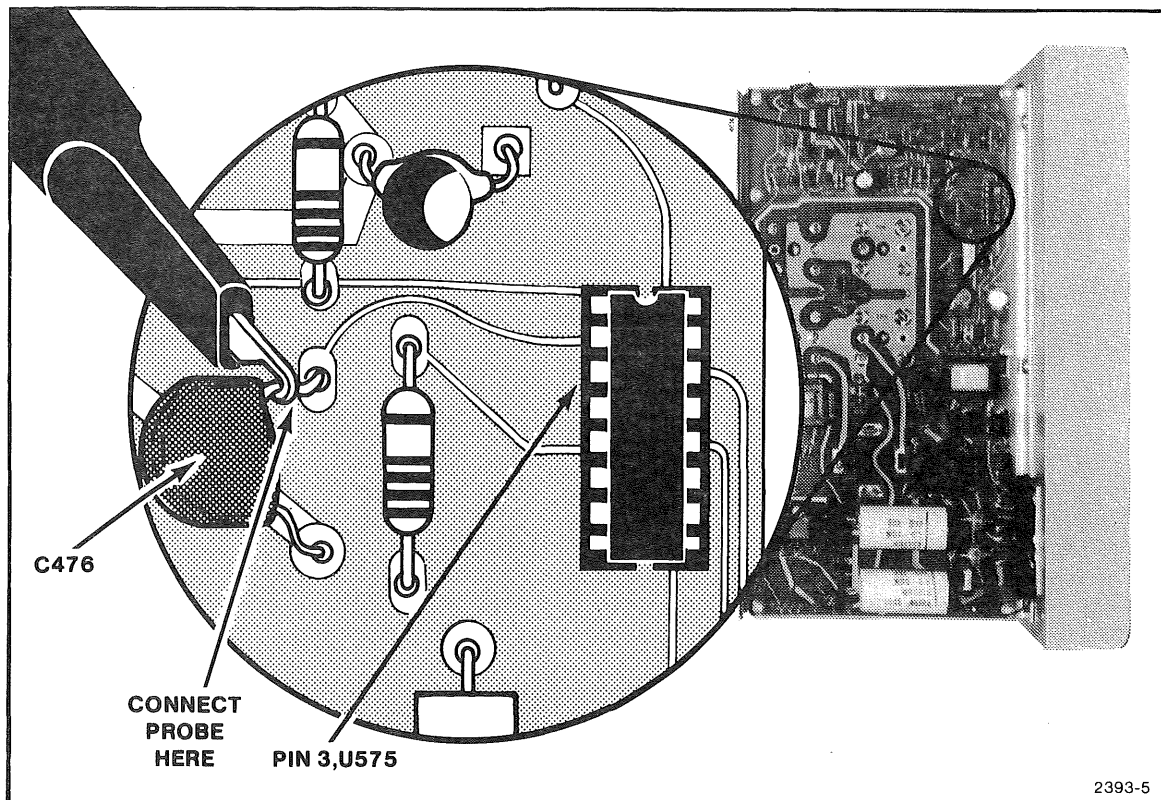


Figure 3-4. Connecting the Trigger to the Power Supply.

3. Turn on the ULU.
4. Turn on the autotransformer and adjust the voltage to 120 V.
5. Turn on the power supply using the remote switch or jumper.
6. Select Channel 5 on the ULU. Adjust R591 on the Inverter board (Figure 3-3) for a reading of 55.1 V $\pm$ 100 mV on the ULU meter.
7. Adjust the TRIGGER LEVEL if necessary and return VERT MODE to CH 2.

NOTE

The following procedure is repeated for each active channel.

+5 V Supply

Channel 1 and Channel 2 on the ULU form a parallel load for this supply.

1. Select Channel 1 on the ULU.
2. Set VOLTAGE/CURRENT to VOLTAGE.
3. Verify that the voltage is within the limits given in Table 3-1.

PERFORMANCE CHECK

4. Measure the peak-to-peak 40 kHz ripple from the brightest part of the trace (Figure 3-5). The lighter band is caused by 60 Hz ripple. Ignore noise spikes.

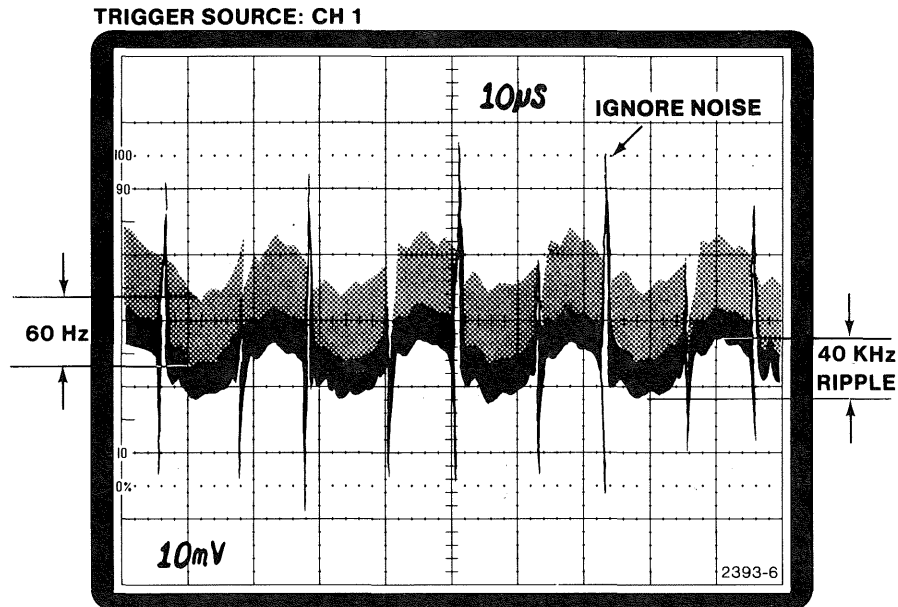


Figure 3-5. Measuring 40 kHz Ripple.

5. Select Channel 2 on the ULU. Verify the voltage and ripple.
6. Set MAX/MIN to MAX for both Channel 1 and Channel 2.
7. Recheck the voltage and ripple for Channel 1 and 2.
8. Set VOLTAGE/CURRENT to CURRENT.
9. For each channel verify that the ULU is drawing the current given in Table 3-1.

NOTE

The power supply may emit a buzzing sound when in the current limiting mode. This is normal.

If the current limit circuit latches up, push in CURRENT ADJUST and set MAX/MIN for the channel(s) to MIN.

10. Select Channel 2 on the ULU and verify the current foldback point as follows:

Pull out the inner knob of CURRENT ADJUST. Turn the outer knob cw to add current while watching the ammeter for an abrupt drop. This drop is caused by the foldback circuit when the supply enters the limiting mode. The OUT OF REGULATION LEDs also should come on. Verify that the highest current is less than the value given in Table 3-1. This value, when added to the fixed current drawn by Channel 1, meets the requirement given in the power supply specifications. (Step 9 tested the lower limit.)

11. Reset CURRENT ADJUST to midrange and "in."

CAUTION

To avoid invalid measurements on the next test, always push in the inner knob of CURRENT ADJUST and center the outer knob after verifying the foldback point.

12. Set MAX/MIN to MAX for Channel 1 and to MIN for Channel 2.

Table 3-1
PERFORMANCE CHECK SUMMARY

Supply	Select Channel	Voltage Range ^a	Ripple ^b (p-p)	Approx. Current at MAX Load ^c	Foldback Point	Leave Load Switch
+5 V	1	4.85 to 5.15 V	100 mV	18 A	Do not test	MAX
	2	4.85 to 5.15 V	100 mV	12 A	<19 A	MIN
+12 V	3	11.64 to 12.36 V	20 mV	4 A	<6 A	MIN
+24 V	4	23.28 to 24.72 V	20 mV	1.8 A	<2.8 A	MIN

^aIf a voltage reading falls below the range, consider voltage drop in the cable to the ULU by measuring the voltage at the power supply output.

^bThe ripple figures are not performance requirements. They are provided solely for the information of the service person. Ignore noise spikes. Refer to Figure 3-5 for all supplies and also to Figure 3-6 for the +55 V supply.

^cThe supply should meet the other specifications at the current given in this column. The personality insert programs the ULU to draw approximately the current listed when the load is switched to MAX.

Table 3-1 (cont)

Supply	Select Channel	Voltage Range ^a	Ripple ^b (p-p)	Approx. Current at MAX Load. ^c	Foldback Point	Leave Load Switch
+55 V	5	53.90 to 56.10 V	25 mV @ 60 Hz; 50 mV @ 40 kHz	500 mA	<850 mA	MIN
	6	53.90 to 56.10 V	25 mV @ 60 Hz; 50 mV @ 40 kHz	750 mA	Do not test	MIN
-5.2 V	10	-4.99 to -5.41 V	100 mV	4 A	<4.8 A	MIN
-12 V	11	-11.64 to -12.36 V	20 mV	1 A	<1.5 A	MIN

^aIf a voltage reading falls below the range, consider voltage drop in the cable to the ULU by measuring the voltage at the power supply output.

^bThe ripple figures are not performance requirements. They are provided solely for the information of the service person. Ignore noise spikes. Refer to Figure 3-5 for all supplies and also to Figure 3-6 for the +55 V supply.

^cThe supply should meet the other specifications at the current given in this column. The personality insert programs the ULU to draw approximately the current listed when the load is switched to MAX.

PERFORMANCE CHECK

+12 V Supply

1. Select Channel 3 on the ULU.
2. Set VOLTAGE/CURRENT to VOLTAGE. Verify the reading with Table 3-1.
3. Compare the ripple with the value in Table 3-1.
4. Set MAX/MIN for Channel 3 to MAX. Recheck the voltage and ripple.
5. Set VOLTAGE/CURRENT to CURRENT. Verify that the ULU is drawing the current given in Table 3-1.
6. Pull out CURRENT ADJUST and add current until the foldback point is reached. Compare the highest reading with Table 3-1.
7. Reset CURRENT ADJUST to midrange and "in." Set MAX/MIN for Channel 3 to MIN.

+24 V Supply

1. Select Channel 4 on the ULU.
2. Set VOLTAGE/CURRENT to VOLTAGE. Verify the reading with Table 3-1.
3. Compare the ripple with the value in Table 3-1.
4. Set MAX/MIN for Channel 4 to MAX. Recheck the voltage and ripple.
5. Set VOLTAGE/CURRENT to CURRENT. Verify that the ULU is drawing the current given in Table 3-1.
6. Pull out CURRENT ADJUST and add current until the foldback point is reached. Compare the highest reading with the value given in Table 3-1.
7. Reset CURRENT ADJUST to midrange and "in." Set MAX/MIN for Channel 4 to MIN.

+55 V Supply

Channels 5 and 6 load this supply in parallel.

1. Select Channel 5 on the ULU.
2. Set VOLTAGE/CURRENT to VOLTAGE. Verify the reading with Table 3-1.
3. Compare the ripple with the value in Table 3-1.
4. Select Channel 6 on the ULU. Check the voltage and ripple.
5. Set MAX/MIN for both channels to MAX. Recheck the voltage and ripple for each channel.
6. Change the oscilloscope settings as follows:

TIME/DIV	5 ms
TRIGGER SOURCE	LINE

7. Reset MAX/MIN for Channels 5 and 6 to MIN.
8. Measure the 60 Hz ripple for each channel by reading the peak-to-peak displacement of the band as shown in Figure 3-6. The band is the 40 kHz ripple which you checked in Steps 3 and 4.

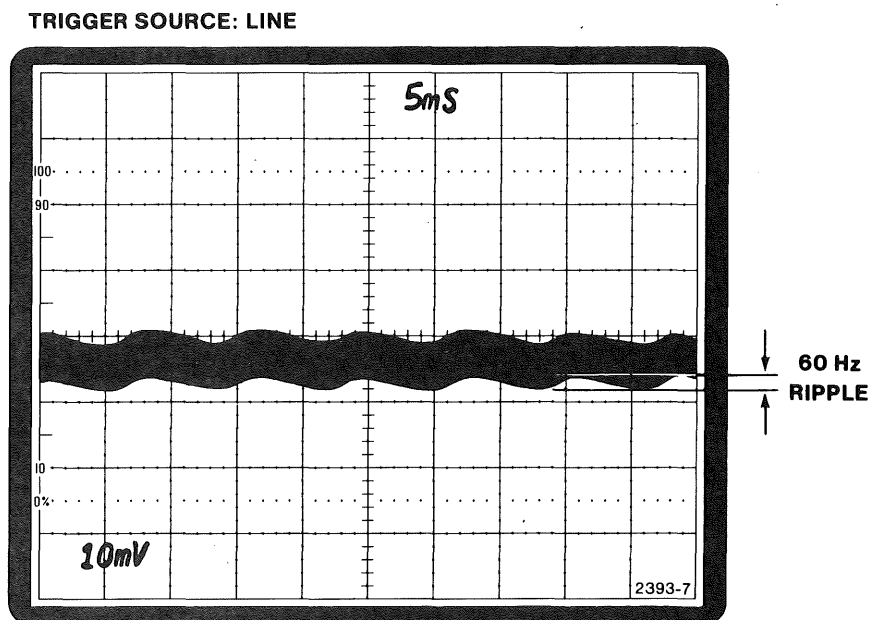


Figure 3-6. Measuring 60 Hz Ripple.

PERFORMANCE CHECK

9. Set MAX/MIN for each channel to MAX. Recheck 60 Hz ripple on each channel.
10. Set VOLTAGE/CURRENT to CURRENT.
11. Measure the current on each channel and verify that the ULU is drawing the current given in Table 3-1.
12. Select Channel 5. Pull out CURRENT ADJUST and add current until the foldback point is reached. Compare the highest reading with the value given in Table 3-1. This value, when added to the current drawn by Channel 6, meets the requirement given in the power supply specifications.
13. Reset CURRENT ADJUST to "in" and midrange. Set MAX/MIN for Channel 5 and 6 to MIN.
14. Reset the oscilloscope as follows:

TIME/DIV	10 μ s
TRIGGER SOURCE	CH 1

-5.2 V Supply

1. Select Channel 10 on the ULU.
2. Set VOLTAGE/CURRENT to VOLTAGE. Compare the reading with Table 3-1.
3. Compare the ripple with the value in Table 3-1.
4. Set MAX/MIN for Channel 10 to MAX. Recheck the voltage and ripple.
5. Set VOLTAGE/CURRENT to CURRENT. Verify that the ULU is drawing the current given in Table 3-1.
6. Verify that the CURRENT ADJUST knobs are centered, then pull out CURRENT ADJUST and turn the outer knob counter-clockwise to add current until the foldback point is reached. Compare the highest reading with the value in Table 3-1.
7. Reset CURRENT ADJUST to "in" and midrange. Set MAX/MIN for Channel 10 to MIN.

-12 V Supply

1. Select Channel 11 on the ULU.
2. Set VOLTAGE/CURRENT to VOLTAGE. Compare the reading with Table 3-1.
3. Compare the ripple with the value in Table 3-1.
4. Set MAX/MIN for Channel 11 to MAX. Recheck the voltage and ripple.
5. Set VOLTAGE/CURRENT to CURRENT. Verify that the ULU is drawing the current given in Table 3-1.
6. Pull out CURRENT ADJUST and turn the outer knob counter-clockwise to add current until the foldback point is reached. Compare the highest reading with the value in Table 3-1.
7. Reset CURRENT ADJUST to "in" and midrange. Set MAX/MIN for Channel 11 to MIN.

Line Voltages

The maximum load configuration used in this test draws slightly more than 350 W through the power cord.

1. Set the controls on the load unit as follows:

LOAD SELECT	IND and SWITCHED
MAX/MIN Switches	
1, 2, 5, 10	MAX
3, 4, 6, and 11	MIN
VOLTAGE/CURRENT	VOLTAGE
CURRENT ADJUST	midrange and "in"
OVER VOLTAGE TEST	OFF

2. Turn on the ULU.
3. Turn on the power supply using the remote switch.
4. Adjust the autotransformer to low line voltage (90 V for 115 V nominal; 180 V for 230 V nominal).

PERFORMANCE CHECK

5. For each channel (1 through 6, 10, and 11), verify that the voltage is within the limits given in Table 3-1.
6. Adjust the autotransformer to high line voltage (132 V for 115 V nominal; 264 V for 230 V nominal).
7. For each channel (1 through 6, 10, and 11), verify that the voltage is within the limits.

INIT-0 and PWRFL-0

1. Set the oscilloscope as follows:

TIME/DIV	10 ms
VERT MODE	CHOP
CH 1 VOLTS/DIV	2 V
CH 1 COUPLING	DC
CH 2 VOLTS/DIV	2 V
CH 2 COUPLING	DC
TRIGGER SOURCE	CH 1
TRIGGER COUPLING	AC
TRIGGER MODE	AUTO
TRIGGER SLOPE	+
TRIGGER LEVEL	Midrange

2. Set LOAD SELECT to LOW.
3. Turn on the ULU.
4. Verify that the autotransformer is set to the high line voltage (132 or 264 V) from the preceding test.
5. Turn on the power supply using the remote switch.
6. Test the trigger level by touching the Channel 1 probe to +5 V SENSE (J73-4). If the oscilloscope does not trigger on contact, adjust TRIGGER LEVEL and repeat. Fasten the probe to +5 V SENSE.
7. Connect Channel 2 to INIT (J73-6).
8. Position the Channel 1 ground reference at the center of the screen and position the Channel 2 ground reference one division above the bottom.

9. Set TRIGGER MODE to SINGLE SWEEP.
10. Turn off the power supply and then turn it back on.

Compare the waveform with that shown in Figure 3-7.
INIT-0 should remain low for at least 50 ms after +5 V SENSE reaches its lower margin of 4.85 V.

11. Change the oscilloscope settings as follows:

TIME/DIV	5 ms
TRIGGER MODE	AUTO
TRIGGER SLOPE	-

12. Set the autotransformer to the low line voltage (90 V or 180 V).
13. Set LOAD SELECT to IND and SWITCHED. The channel load switches should be in the same position as in the preceding line voltage test: Channels 1, 2, 5, and 10 on MAX; Channels 3, 4, 6, and 11 on MIN.
14. Move the Channel 1 probe to PWRFL-0 (J73-5). Test the trigger level by touching the probe to the pin and removing it. If the oscilloscope does not trigger when the probe is removed, adjust TRIGGER LEVEL and repeat. Fasten the probe to PWRFL-0.

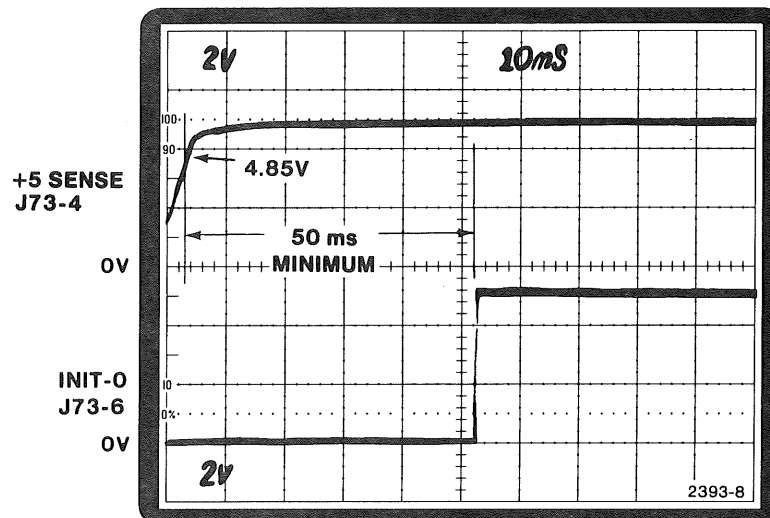


Figure 3-7. Power-Up Waveform.

PERFORMANCE CHECK

15. Turn off the power. This simulates a power failure and should trigger the oscilloscope.

Compare the waveform with that shown in Figure 3-8. PWRFL-0 should go low at least 11 ms before INIT-0.

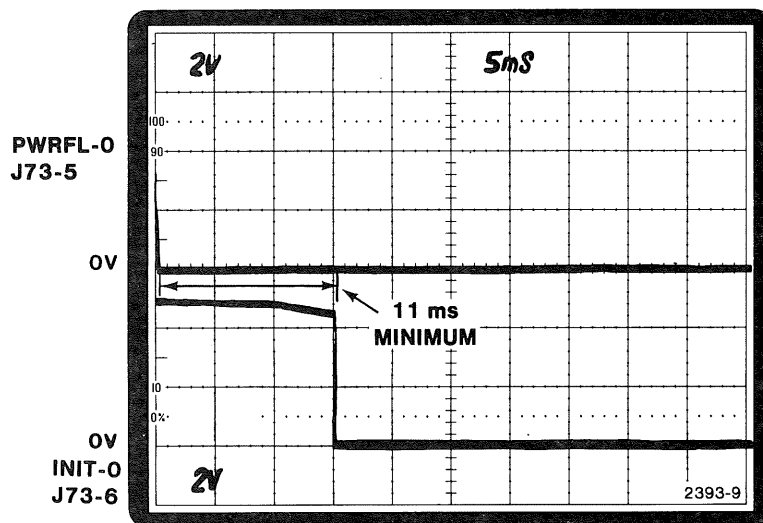


Figure 3-8. Power-Down Waveform.

This completes the performance check.

Section 4

REPLACEABLE

ELECTRICAL PARTS

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

SPECIAL NOTES AND SYMBOLS

X000 Part first added at this serial number
00X Part removed after this serial number

ITEM NAME

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

ABBREVIATIONS

ACTR	ACTUATOR	PLSTC	PLASTIC
ASSY	ASSEMBLY	QTZ	QUARTZ
CAP	CAPACITOR	RECP	RECEPTACLE
CER	CERAMIC	RES	RESISTOR
CKT	CIRCUIT	RF	RADIO FREQUENCY
COMP	COMPOSITION	SEL	SELECTED
CONN	CONNECTOR	SEMICON	SEMICONDUCTOR
ELCTLT	ELECTROLYTIC	SENS	SENSITIVE
ELEC	ELECTRICAL	VAR	VARIABLE
INCAND	INCANDESCENT	WW	WIREWOUND
LED	LIGHT EMITTING DIODE	XFMR	TRANSFORMER
NONWIR	NON WIREWOUND	XTAL	CRYSTAL

REPLACEABLE ELECTRICAL PARTS

CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
01121	ALLEN-BRADLEY COMPANY	1201 2ND STREET SOUTH	MILWAUKEE, WI 53204
01295	TEXAS INSTRUMENTS, INC., SEMICONDUCTOR GROUP	P O BOX 5012, 13500 N CENTRAL EXPRESSWAY	DALLAS, TX 75222
04713	MOTOROLA, INC., SEMICONDUCTOR PROD. DIV.	5005 E MCDOWELL RD, PO BOX 20923	PHOENIX, AZ 85036
07263	FAIRCHILD SEMICONDUCTOR, A DIV. OF FAIRCHILD CAMERA AND INSTRUMENT CORP.	464 ELLIS STREET	MOUNTAIN VIEW, CA 94042
24546	CORNING GLASS WORKS, ELECTRONIC COMPONENTS DIVISION	550 HIGH STREET	BRADFORD, PA 16701
55210	GETTIG ENG. AND MFG. COMPANY	PO BOX 85, OFF ROUTE 45	SPRING MILLS, PA 16875
80009	TEKTRONIX, INC.	P O BOX 500	BEAVERTON, OR 97077
91637	DALE ELECTRONICS, INC.	P. O. BOX 609	COLUMBUS, NE 68601

REPLACEABLE ELECTRICAL PARTS

Component No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Name & Description	Mfr Code	Mfr Part Number
CH01RDES	131-0566-00		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
CH01RFL	321-0376-00		RES.,FXD,FILM:80.6K OHM,1%,0.125W	91637	MFF1816G80601F
CH01RPH	321-0302-00		RES.,FXD,FILM:13.7K OHM,1%,0.125W	91637	MFF1816G13701F
CH02RCOMP	321-0816-00		RES.,FXD,FILM:5K OHM,1%,0.125W	24546	NA55D5001F
CH02RDES	321-0318-00		RES.,FXD,FILM:20K OHM,1%,0.125W	91637	MFF1816G20001F
CH02RFL	321-0380-00		RES.,FXD,FILM:88.7K OHM,1%,0.125W	91637	MFF1816G88701F
CH02RPH	321-0320-00		RES.,FXD,FILM:21K OHM,1%,0.125W	91637	MFF1816G21001F
CH03RCOMP	321-0297-00		RES.,FXD,FILM:12.1K OHM,1%,0.125W	91637	MFF1816G12101F
CH03RDES	321-0268-00		RES.,FXD,FILM:6.04K OHM,1%,0.125W	91637	MFF1816G60400F
CH03RFL	321-0452-00		RES.,FXD,FILM:499K OHM,1%,0.125W	91637	MFF1816G49902F
CH03RPH	321-0327-00		RES.,FXD,FILM:24.9K OHM,1%,0.125W	91637	MFF1816G24901F
CH04RCOMP	321-0959-03		RES.,FXD,FILM:24.0K OHM,0.25%,0.125W	91637	CMF110216D24010C
CH04RDES	321-0259-00		RES.,FXD,FILM:4.87K OHM,1%,0.125W	91637	MFF1816G48700F
CH04RFL	321-1628-02		RES.,FXD,FILM:1.644M OHM,0.5%,0.125W	91637	HFF188D16443D
CH04RPH	321-1623-02		RES.,FXD,FILM:55.5K OHM,0.5%,0.125W	91637	MFF1816D55501D
CH05RCOMP	321-0360-00		RES.,FXD,FILM:54.9K OHM,1%,0.125W	91637	MFF1816G54901F
CH05RDES	321-0277-00		RES.,FXD,FILM:7.5K OHM,1%,0.125W	91637	MFF1816G75000F
CH05RFL	321-1484-03		RES.,FXD,FILM:1.09M OHM,0.25%,0.125W	91637	HFF188D10903C
CH05RPH	321-0924-02		RES.,FXD,FILM:40K OHM,0.5%,0.125W	24546	NC55C4002D
CH06RDES	131-0566-00		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
CH06RFL	321-0469-04		RES.,FXD,FILM:750K OHM,0.1%,0.125W	91637	MFF1816D75002B
CH06RPH	321-0330-00		RES.,FXD,FILM:26.7K OHM,1%,0.125W	91637	MFF1816G26701F
CH07RDES	131-0566-00		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
CH08RDES	131-0566-00		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
CH09RDES	131-0566-00		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
CH10RCOMP	321-1701-04		RES.,FXD,FILM:5.22K OHM,0.1%,0.125W	91637	MFF1816D52200B
CH10RDES	321-0312-00		RES.,FXD,FILM:17.4K OHM,1%,0.125W	91637	MFF1816G17401F
CH10RFL	321-0640-00		RES.,FXD,FILM:106K OHM,1%,0.125W	91637	MFF1816G10602F
CH10RPH	321-0327-00		RES.,FXD,FILM:24.9K OHM,1%,0.125W	91637	MFF1816G24901F
CH11RCOMP	321-0297-00		RES.,FXD,FILM:12.1K OHM,1%,0.125W	91637	MFF1816G12101F
CH11RDES	321-0268-00		RES.,FXD,FILM:6.04K OHM,1%,0.125W	91637	MFF1816G60400F
CH11RFL	321-0701-00		RES.,FXD,FILM:187K OHM,0.25%,0.125W	91637	MFF1816C18702C
CH11RPH	321-0318-00		RES.,FXD,FILM:20K OHM,1%,0.125W	91637	MFF1816G20001F
CH12RDES	131-0566-00		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
CH13RCOMP	131-0566-00		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG	55210	L-2007-1
CR5001	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5002	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5005	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5006	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5010	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5011	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5015	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5016	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5020	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5021	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5025	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5026	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5030	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5031	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5035	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5036	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5040	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5041	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5045	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5046	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5050	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5051	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5055	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR5056	152-0141-02		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R

REPLACEABLE ELECTRICAL PARTS

Component No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Name & Description	Mfr Code	Mfr Part Number
Q5011	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5012	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5013	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5014	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5015	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5016	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5017	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5018	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5021	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5022	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5023	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5024	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5025	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5026	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5027	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5028	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5031	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5032	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5033	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5034	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5035	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5036	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5037	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5038	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5041	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5042	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5043	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5044	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5045	151-0433-00		TRANSISTOR:SILICON,NPN	80009	151-0433-00
Q5046	151-0433-00		TRANSISTOR:SILICON,NPN	80009	151-0433-00
Q5047	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5048	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5051	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5052	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5053	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5054	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5055	151-0433-00		TRANSISTOR:SILICON,NPN	80009	151-0433-00
Q5056	151-0433-00		TRANSISTOR:SILICON,NPN	80009	151-0433-00
Q5057	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5058	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5061	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5062	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5063	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5064	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5065	151-0433-00		TRANSISTOR:SILICON,NPN	80009	151-0433-00
Q5066	151-0433-00		TRANSISTOR:SILICON,NPN	80009	151-0433-00
Q5067	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5068	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5071	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5072	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5073	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5074	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5075	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5076	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5077	151-0433-00		TRANSISTOR:SILICON,NPN	80009	151-0433-00
Q5078	151-0433-00		TRANSISTOR:SILICON,NPN	80009	151-0433-00
Q5081	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K

REPLACEABLE ELECTRICAL PARTS

Component No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Name & Description	Mfr Code	Mfr Part Number
Q5082	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5083	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5084	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5085	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5086	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5087	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5088	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5091	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5092	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5093	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5094	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5095	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5096	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5097	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5098	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5101	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5102	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5103	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5104	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5105	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5106	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5107	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5108	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5111	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5112	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5113	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5114	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5115	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5116	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5117	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5118	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5121	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5122	151-0188-00		TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q5123	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5124	151-0190-00		TRANSISTOR:SILICON,NPN	07263	S032677
Q5125	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5126	151-0444-00		TRANSISTOR:SILICON,NPN	80009	151-0444-00
Q5127	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
Q5128	151-0443-00		TRANSISTOR:SILICON,PNP	80009	151-0443-00
R5001	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5002	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5003	321-0200-00		RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R5004	321-0220-00		RES.,FXD,FILM:1.91K OHM,1%,0.125W	91637	MFF1816G19100F
R5005	315-0822-00		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W	01121	CB8225
R5007	315-0202-00		RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R5008	321-0222-00		RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R5009	321-0280-00		RES.,FXD,FILM:8.06K OHM,1%,0.125W	91637	MFF1816G80600F
R5010	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5012	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5014	315-0102-00		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R5015	315-0563-00		RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R5016	315-0562-00		RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R5017	315-0511-00		RES.,FXD,CMPSN:510 OHM,5%,0.25W	01121	CB5115
R5018	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5019	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5020	321-0200-00		RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R5022	321-0220-00		RES.,FXD,FILM:1.91K OHM,1%,0.125W	91637	MFF1816G19100F

REPLACEABLE ELECTRICAL PARTS

Component No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Name & Description	Mfr Code	Mfr Part Number
R5023	315-0822-00		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W	01121	CB8225
R5024	315-0202-00		RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R5025	321-0222-00		RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R5027	321-0280-00		RES.,FXD,FILM:8.06K OHM,1%,0.125W	91637	MFF1816G80600F
R5028	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5030	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5031	315-0102-00		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R5032	315-0563-00		RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R5035	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5036	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5037	321-0200-00		RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R5039	321-0220-00		RES.,FXD,FILM:1.91K OHM,1%,0.125W	91637	MFF1816G19100F
R5040	315-0822-00		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W	01121	CB8225
R5041	315-0202-00		RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R5042	321-0222-00		RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R5044	321-0280-00		RES.,FXD,FILM:8.06K OHM,1%,0.125W	91637	MFF1816G80600F
R5045	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5047	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5048	315-0102-00		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R5049	315-0563-00		RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R5051	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5052	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5053	321-0200-00		RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R5054	321-0220-00		RES.,FXD,FILM:1.91K OHM,1%,0.125W	91637	MFF1816G19100F
R5055	315-0822-00		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W	01121	CB8225
R5056	315-0202-00		RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R5057	321-0222-00		RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R5059	321-0280-00		RES.,FXD,FILM:8.06K OHM,1%,0.125W	91637	MFF1816G80600F
R5060	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5062	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5063	315-0102-00		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R5064	315-0563-00		RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R5066	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5067	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5068	321-0200-00		RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R5069	321-0220-00		RES.,FXD,FILM:1.91K OHM,1%,0.125W	91637	MFF1816G19100F
R5070	315-0822-00		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W	01121	CB8225
R5071	315-0202-00		RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R5072	321-0222-00		RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R5074	321-0280-00		RES.,FXD,FILM:8.06K OHM,1%,0.125W	91637	MFF1816G80600F
R5075	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5077	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5078	315-0102-00		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R5079	315-0563-00		RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R5081	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5082	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5083	321-0200-00		RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R5084	321-0220-00		RES.,FXD,FILM:1.91K OHM,1%,0.125W	91637	MFF1816G19100F
R5085	315-0822-00		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W	01121	CB8225
R5086	315-0202-00		RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R5087	321-0222-00		RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R5089	321-0280-00		RES.,FXD,FILM:8.06K OHM,1%,0.125W	91637	MFF1816G80600F
R5090	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5092	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5093	315-0102-00		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R5094	315-0563-00		RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R5096	308-0643-00		RES.,FXD,WW:0.1 OHM,3%,3W	91637	RS2B-ER1000H

REPLACEABLE ELECTRICAL PARTS

Component No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Name & Description	Mfr Code	Mfr Part Number
R5100	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5101	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5102	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5104	315-0202-00		RES., FXD, CMPSN: 2K OHM, 5%, 0.25W	01121	CB2025
R5105	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5106	321-0200-00		RES., FXD, FILM: 1.18K OHM, 1%, 0.125W	91637	MFF1816G11800F
R5107	315-0912-00		RES., FXD, CMPSN: 9.1K OHM, 5%, 0.25W	01121	CB9125
R5108	321-0220-00		RES., FXD, FILM: 1.91K OHM, 1%, 0.125W	91637	MFF1816G19100F
R5109	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F
R5111	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F
R5112	315-0102-00		RES., FXD, CMPSN: 1K OHM, 5%, 0.25W	01121	CB1025
R5114	315-0563-00		RES., FXD, CMPSN: 56K OHM, 5%, 0.25W	01121	CB5635
R5116	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5117	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5118	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5120	315-0202-00		RES., FXD, CMPSN: 2K OHM, 5%, 0.25W	01121	CB2025
R5121	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5122	321-0200-00		RES., FXD, FILM: 1.18K OHM, 1%, 0.125W	91637	MFF1816G11800F
R5123	315-0912-00		RES., FXD, CMPSN: 9.1K OHM, 5%, 0.25W	01121	CB9125
R5124	321-0220-00		RES., FXD, FILM: 1.91K OHM, 1%, 0.125W	91637	MFF1816G19100F
R5125	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F
R5127	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F
R5128	315-0102-00		RES., FXD, CMPSN: 1K OHM, 5%, 0.25W	01121	CB1025
R5130	315-0563-00		RES., FXD, CMPSN: 56K OHM, 5%, 0.25W	01121	CB5635
R5132	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5133	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5134	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5136	315-0202-00		RES., FXD, CMPSN: 2K OHM, 5%, 0.25W	01121	CB2025
R5137	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5138	321-0200-00		RES., FXD, FILM: 1.18K OHM, 1%, 0.125W	91637	MFF1816G11800F
R5139	315-0912-00		RES., FXD, CMPSN: 9.1K OHM, 5%, 0.25W	01121	CB9125
R5140	321-0220-00		RES., FXD, FILM: 1.91K OHM, 1%, 0.125W	91637	MFF1816G19100F
R5141	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F
R5143	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F
R5144	315-0102-00		RES., FXD, CMPSN: 1K OHM, 5%, 0.25W	01121	CB1025
R5146	315-0563-00		RES., FXD, CMPSN: 56K OHM, 5%, 0.25W	01121	CB5635
R5148	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5149	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5150	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5152	315-0202-00		RES., FXD, CMPSN: 2K OHM, 5%, 0.25W	01121	CB2025
R5153	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5154	321-0200-00		RES., FXD, FILM: 1.18K OHM, 1%, 0.125W	91637	MFF1816G11800F
R5155	315-0912-00		RES., FXD, CMPSN: 9.1K OHM, 5%, 0.25W	01121	CB9125
R5156	321-0220-00		RES., FXD, FILM: 1.91K OHM, 1%, 0.125W	91637	MFF1816G19100F
R5157	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F
R5159	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F
R5160	315-0102-00		RES., FXD, CMPSN: 1K OHM, 5%, 0.25W	01121	CB1025
R5162	315-0563-00		RES., FXD, CMPSN: 56K OHM, 5%, 0.25W	01121	CB5635
R5164	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5165	315-0103-00		RES., FXD, CMPSN: 10K OHM, 5%, 0.25W	01121	CB1035
R5166	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5168	315-0202-00		RES., FXD, CMPSN: 2K OHM, 5%, 0.25W	01121	CB2025
R5169	315-0302-00		RES., FXD, CMPSN: 3K OHM, 5%, 0.25W	01121	CB3025
R5170	321-0200-00		RES., FXD, FILM: 1.18K OHM, 1%, 0.125W	91637	MFF1816G11800F
R5171	315-0912-00		RES., FXD, CMPSN: 9.1K OHM, 5%, 0.25W	01121	CB9125
R5172	321-0220-00		RES., FXD, FILM: 1.91K OHM, 1%, 0.125W	91637	MFF1816G19100F
R5173	321-0289-00		RES., FXD, FILM: 10K OHM, 1%, 0.125W	91637	MFF1816G10001F

REPLACEABLE ELECTRICAL PARTS

Component No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Name & Description	Mfr Code	Mfr Part Number
R5175	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5176	315-0102-00		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R5178	315-0912-00		RES.,FXD,CMPSN:9.1K OHM,5%,0.25W	01121	CB9125
R5178	315-0563-00		RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R5180	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5181	315-0103-00		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R5182	315-0302-00		RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R5184	315-0202-00		RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R5185	315-0302-00		RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R5186	321-0200-00		RES.,FXD,FILM:1.18K OHM,1%,0.125W	91637	MFF1816G11800F
R5188	321-0220-00		RES.,FXD,FILM:1.91K OHM,1%,0.125W	91637	MFF1816G19100F
R5189	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5191	321-0289-00		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R5192	315-0102-00		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R5194	315-0563-00		RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635

Section 5

DIAGRAMS AND SCHEMATICS

Symbols and Reference Designators

Electrical components shown on the diagrams are in the following units unless noted otherwise:

Capacitors = Values one or greater are in picofarads (pF).
Values less than one are in microfarads (μ F).
Resistors = Ohms (Ω).

Graphic symbols and class designation letters are based on ANSI Standard Y32.2-1975.

Logic symbology is based on ANSI Y32.14-1973 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

Abbreviations are based on ANSI Y1.1-1972.

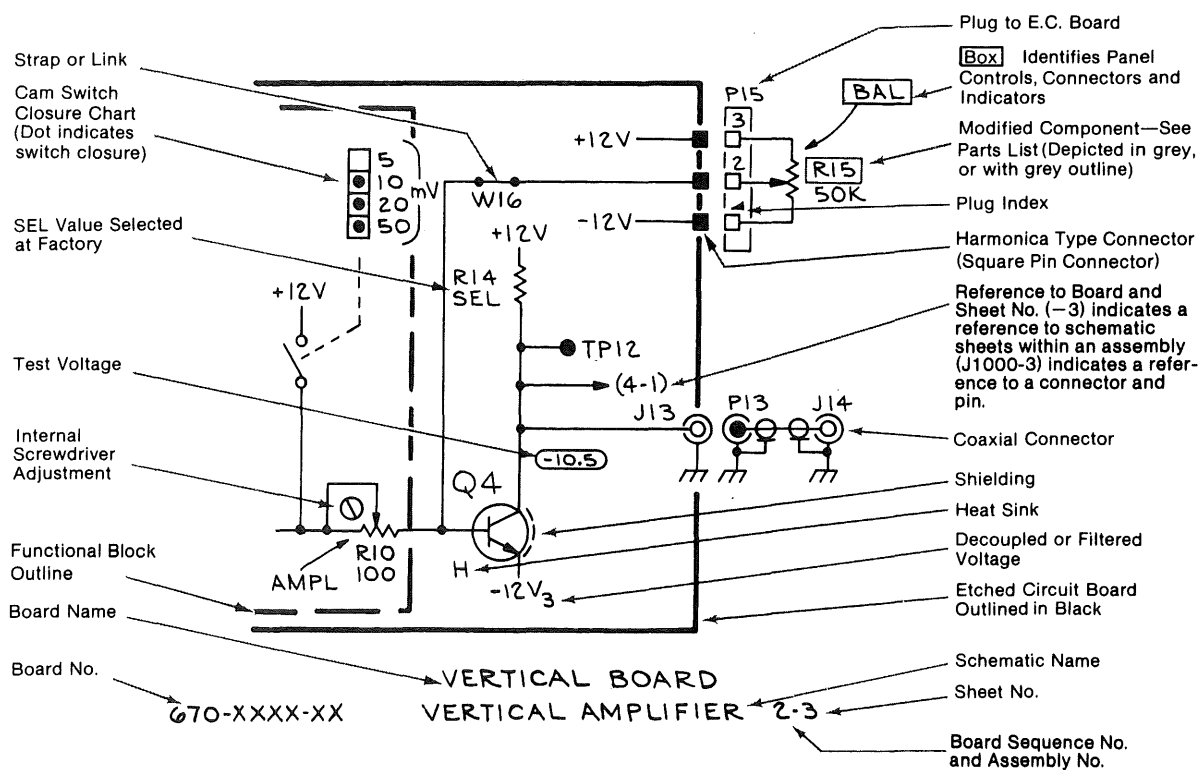
Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

Y14.15, 1966 Drafting Practices.
Y14.2, 1973 Line Conventions and Lettering.
Y10.5, 1968 Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering.

The following prefix letters are used as reference designators to identify components or assemblies on the diagrams.

A	Assembly, separable or repairable (circuit board, etc)	H	Heat dissipating device (heat sink, heat radiator, etc)	S	Switch or contactor
AT	Attenuator, fixed or variable	HR	Heater	T	Transformer
B	Motor	HY	Hybrid circuit	TC	Thermocouple
BT	Battery	J	Connector, stationary portion	TP	Test point
C	Capacitor, fixed or variable	K	Relay	U	Assembly, inseparable or non-repairable (integrated circuit, etc.)
CB	Circuit breaker	L	Inductor, fixed or variable	V	Electron tube
CR	Diode, signal or rectifier	M	Meter	VR	Voltage regulator (zener diode, etc.)
DL	Delay line	P	Connector, movable portion	W	Wirestrap or cable
DS	Indicating device (lamp)	Q	Transistor or silicon-controlled rectifier	Y	Crystal
E	Spark Gap, Ferrite bead	R	Resistor, fixed or variable	Z	Phase shifter
F	Fuse	RT	Thermistor		
FL	Filter				

The following special symbols may appear on the diagrams:



DIAGRAMS AND SCHEMATICS

1. TRUE HIGH and TRUE LOW Signals

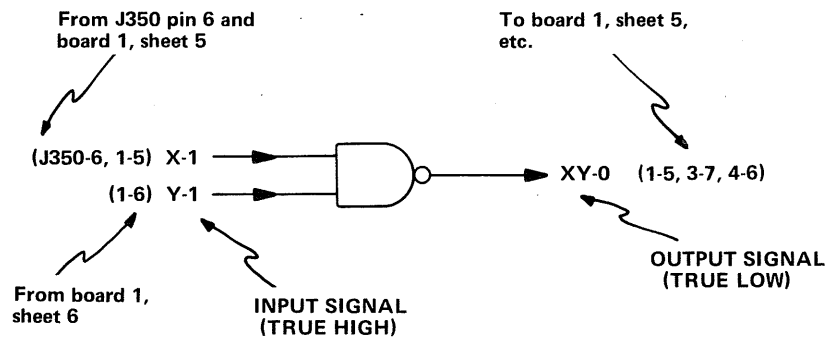
Signal names on the schematics are followed by —1 or —0. A TRUE HIGH signal is indicated by —1, and a TRUE LOW signal is indicated by —0.

SIGNAL—1 = TRUE HIGH

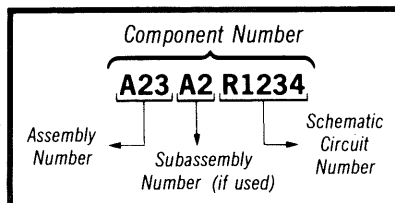
SIGNAL—0 = TRUE LOW

2. Cross-References

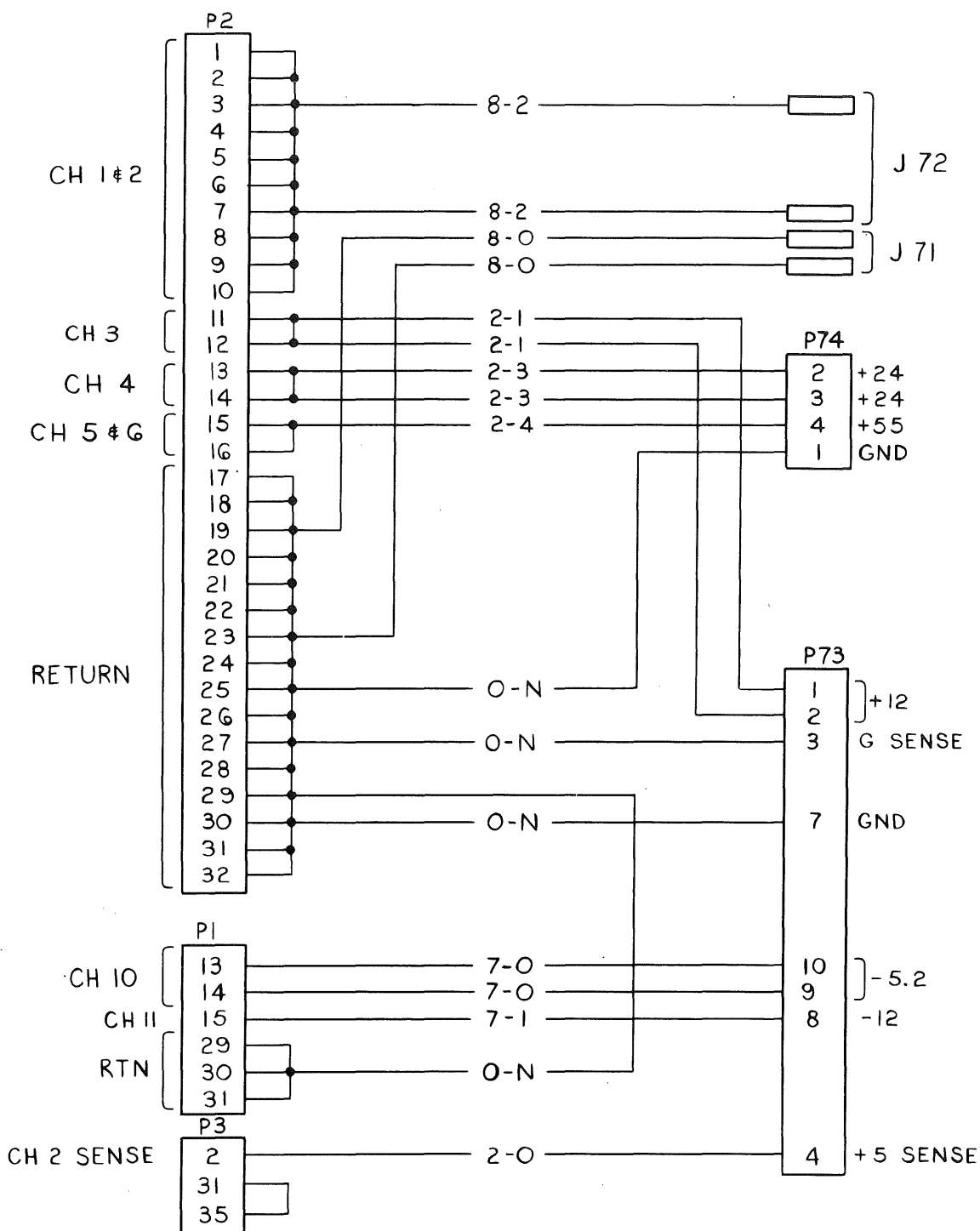
Schematic cross-references (from/to information) are included on the schematics. The “from” reference only indicates the signal “source,” and the “to” reference lists all loads where the signal is used. All from/to information will be enclosed in parentheses.



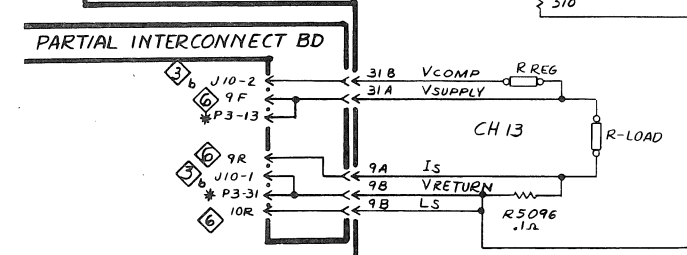
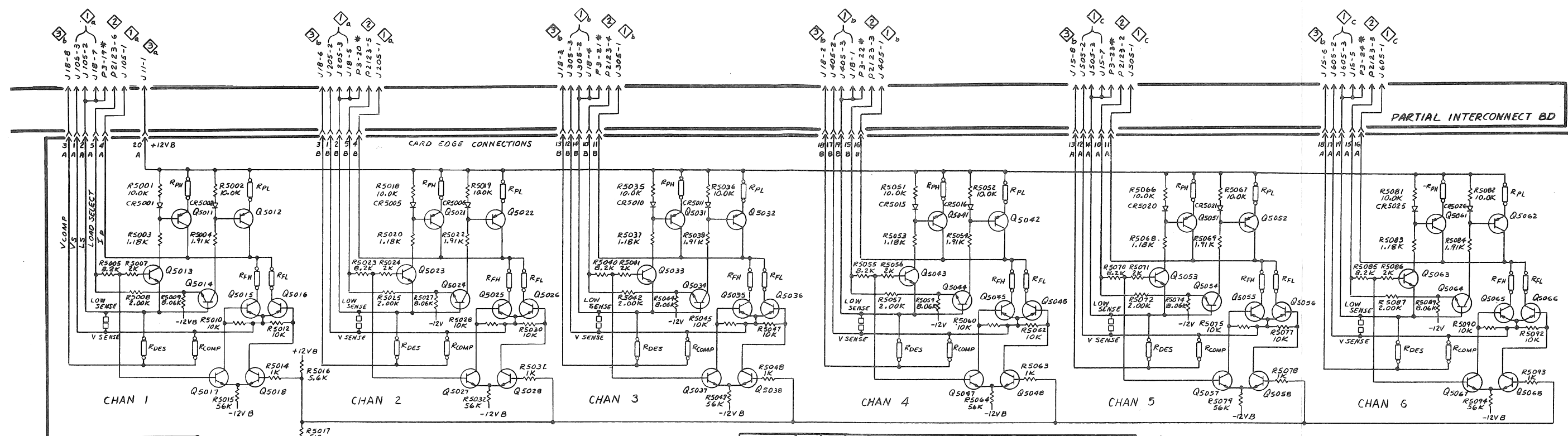
3. Component Number Example



Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.



INTERCONNECT CABLE DIAGRAM



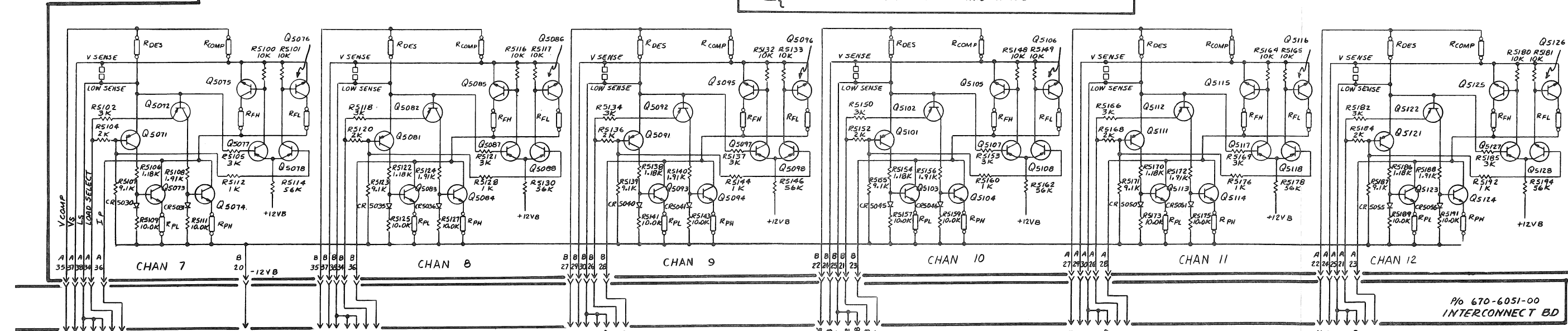
* REAR PANEL CONNECTOR
 □ = USER SELECTED
 □ = SOLDER PADS

CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12	13
RFL	80.6	88.7	499	1.644M	100	75	—	—	—	100	187	—	—
RFH	—	—	—	—	—	—	—	—	—	—	—	—	—
RPL	—	—	—	—	—	—	—	—	—	—	—	—	—
RPH	13.7	21.0	24.9	55.5	40	26.7	—	—	—	24.9	20	—	—
RCOMP	—	5	12.1	24.07/25%	54.9	—	—	—	—	5.22	12.1	—	—
RDES	0.0	20	6.04	4.87	7.5	0.0	0.0	0.0	0.0	17.4	6.04	0.0	0.0
RLOAD	—	—	—	—	—	—	—	—	—	—	—	—	—
RREG	—	—	—	—	—	—	—	—	—	—	—	—	—

ALL VALUES IN K OHMS UNLESS OTHERWISE NOTED

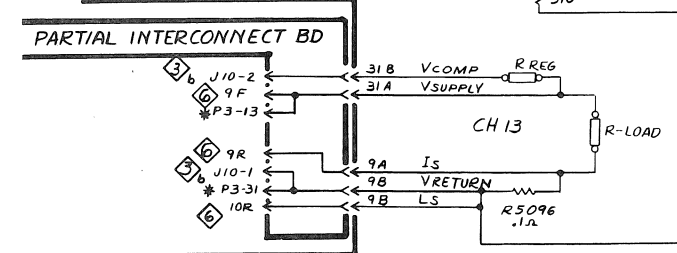
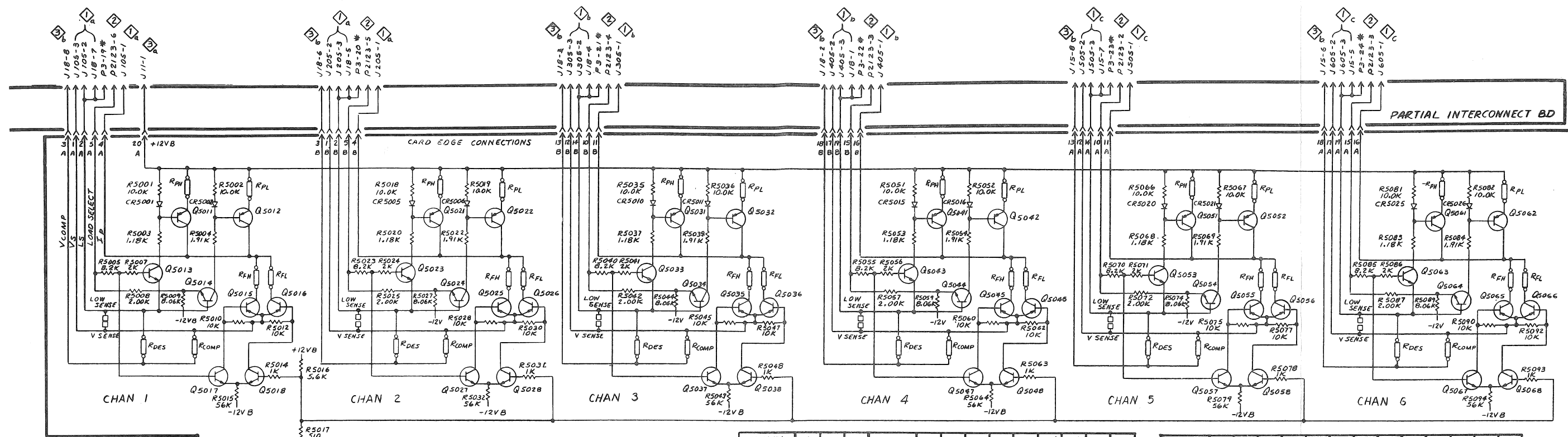
CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12	13
NOMINAL VOLTAGE	+5	+5	+12	+24	+35	+55	—	—	—	—5.2	-12	—	—
NOMINAL LOW I	1.5A	1.5A	250 mA	150 mA	100 mA	150 mA	—	—	—	500 mA	130 mA	—	—
NOMINAL HIGH I	18A	12A	4A	1.8A	.5A	.75A	—	—	—	4A	1A	—	—

THE FOLLOWING CHANNELS ARE NOT USED: 7, 8, 9, 12, 13



067-1002-99

PLUG-IN MODULE
 PROGRAM BOARD
 REV C 6-79



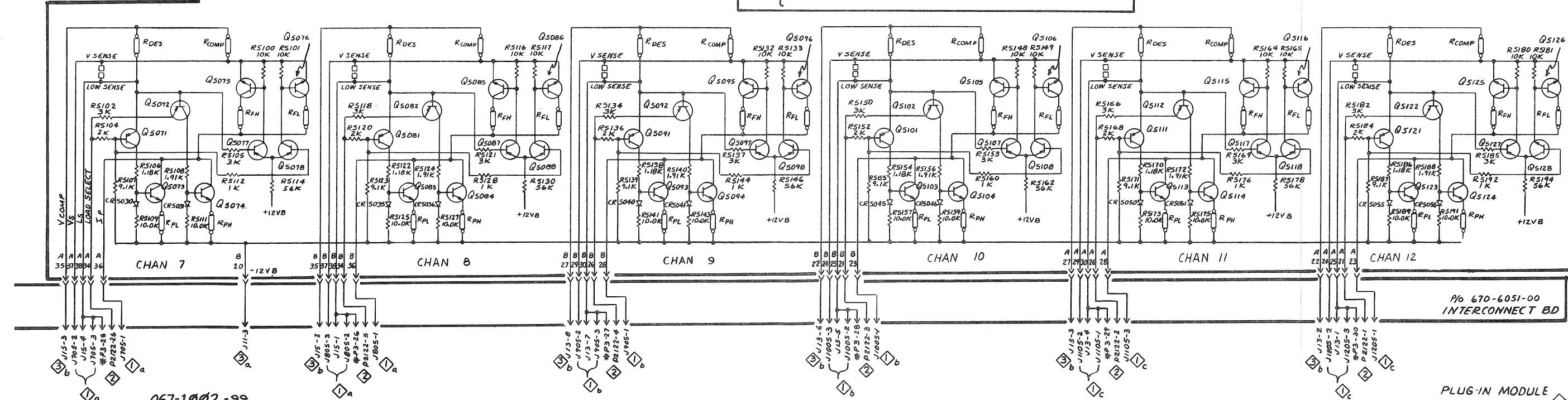
* REAR PANEL CONNECTOR
 □ = USER SELECTED
 □ = SOLDER PADS

CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12	13
RFL	80.6	88.7	499	1.644M	109	75				100	187		
RFH													
RPL													
RPH	13.7	21.0	24.9	55.5	40	26.7				24.9	20		
RCOMP		5	12.1	24.0/25%	54.9					5.22	12.1		
ROES	0.2	20	6.04	4.87	7.5	0.2	0.2	0.2	0.2	17.4	6.04	0.2	0.2
RLOAD													
RREG													

ALL VALUES IN K OHMS UNLESS OTHERWISE NOTED

CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12	13
NOMINAL VOLTAGE	+5	+5	+12	+24	+35	+55							
NOMINAL LOW I	1.5A	1.5A	250 mA	150 mA	100 mA	150 mA				500 mA	130 mA		
NOMINAL HIGH I	18A	12A	4A	1.8A	.5A	.75A				4A	1A		

THE FOLLOWING CHANNELS ARE NOT USED: 7, 8, 9, 12, 13



067-1002-99

PLUG-IN MODULE
 PROGRAM BOARD
 REV C 6-79

Section 6

REPLACEABLE MECHANICAL PARTS

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

SPECIAL NOTES AND SYMBOLS

X000 Part first added at this serial number
00X Part removed after this serial number

FIGURE AND INDEX NUMBERS

Items in this section are referenced by figure and index numbers to the illustrations.

INDENTATION SYSTEM

This mechanical parts list is indented to indicate item relationships. Following is an example of the indentation system used in the description column.

```

1 2 3 4 5           Name & Description
Assembly and/or Component
Attaching parts for Assembly and/or Component
    --- * ---
Detail Part of Assembly and/or Component
Attaching parts for Detail Part
    --- * ---
Parts of Detail Part
Attaching parts for Parts of Detail Part
    --- * ---

```

Attaching Parts always appear in the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation. The separation symbol --- * --- indicates the end of attaching parts.

Attaching parts must be purchased separately, unless otherwise specified.

ITEM NAME

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

ABBREVIATIONS

"	INCH	ELCTRN	ELECTRON	IN	INCH	SE	SINGLE END
#	NUMBER SIZE	ELEC	ELECTRICAL	INCAND	INCANDESCENT	SECT	SECTION
ACTR	ACTUATOR	ELECTLT	ELECTROLYTIC	INSUL	INSULATOR	SEMICON	SEMICONDUCTOR
ADPTR	ADAPTER	ELEM	ELEMENT	INTL	INTERNAL	SHLD	SHIELD
ALIGN	ALIGNMENT	EPL	ELECTRICAL PARTS LIST	LPHLDR	LAMPHOLDER	SHLDR	SHOULDERED
AL	ALUMINUM	EOPT	EQUIPMENT	MACH	MACHINE	SKT	SOCKET
ASSEM	ASSEMBLED	EXT	EXTERNAL	MECH	MECHANICAL	SL	SLIDE
ASSY	ASSEMBLY	FIL	FILLISTER HEAD	MTG	MOUNTING	SLFLKG	SELF-LOCKING
ATTEN	ATTENUATOR	FLEX	FLEXIBLE	NIP	NIPPLE	SLVG	SLEEVING
AWG	AMERICAN WIRE GAGE	FLH	FLAT HEAD	NON WIRE	NOT WIRE WOUND	SPR	SPRING
BD	BOARD	FLTR	FILTER	OBD	ORDER BY DESCRIPTION	SQ	SQUARE
BRKT	BRACKET	FR	FRAME or FRONT	OD	OUTSIDE DIAMETER	SST	STAINLESS STEEL
BRS	BRASS	FSTNR	FASTENER	OVH	OVAL HEAD	STL	STEEL
BRZ	BRONZE	FT	FOOT	PH BRZ	PHOSPHOR BRONZE	SW	SWITCH
BSHG	BUSHING	FXD	FIXED	PL	PLAIN or PLATE	T	TUBE
CAB	CABINET	GSKT	GASKET	PLSTC	PLASTIC	TERM	TERMINAL
CAP	CAPACITOR	HDL	HANDLE	PN	PART NUMBER	THD	THREAD
CER	CERAMIC	HEX	HEXAGON	PNH	PAN HEAD	THK	THICK
CHAS	CHASSIS	HEX HD	HEXAGONAL HEAD	PWR	POWER	TNSN	TENSION
CKT	CIRCUIT	HEX SOC	HEXAGONAL SOCKET	RCPT	RECEPTACLE	TPG	TAPPING
COMP	COMPOSITION	HLCP	HELICAL COMPRESSION	RES	RESISTOR	TRH	TRUSS HEAD
CONN	CONNECTOR	HLEXT	HELICAL EXTENSION	RGD	RIGID	V	VOLTAGE
COV	COVER	HV	HIGH VOLTAGE	RLF	RELIEF	VAR	VARIABLE
CPLG	COUPLING	IC	INTEGRATED CIRCUIT	RTNR	RETAINER	W/	WITH
CRT	CATHODE RAY TUBE	ID	INSIDE DIAMETER	SCH	SOCKET HEAD	WSHR	WASHER
DEG	DEGREE	IDNT	IDENTIFICATION	SCOPE	OSCILLOSCOPE	XFMR	TRANSFORMER
DWR	DRAWER	IMPLR	IMPELLER	SCR	SCREW	XSTR	TRANSISTOR

REPLACEABLE MECHANICAL PARTS

CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
000FW	WESTERN SINTERING CO INC.	2620 STEVENS DRIVE	RICHLAND, WA 99352
00779	AMP, INC.	P O BOX 3608	HARRISBURG, PA 17105
02660	BUNKER RAMO CORP., CONNECTOR DIVISION	2801 S 25TH AVENUE	BROADVIEW, IL 60153
22526	BERG ELECTRONICS, INC.	YOKU EXPRESSWAY	NEW CUMBERLAND, PA 17070
22599	ESNA, DIV. OF AMERACE CORPORATION	16150 STAGG STREET	VAN NUYS, CA 91409
59730	THOMAS AND BETTS COMPANY	36 BUTLER ST.	ELIZABETH, NJ 07207
70485	ATLANTIC INDIA RUBBER WORKS, INC.	571 W. POLK ST.	CHICAGO, IL 60607
71590	CENTRALAB ELECTRONICS, DIV. OF GLOBE-UNION, INC.	P O BOX 858	FORT DODGE, IA 50501
78189	ILLINOIS TOOL WORKS, INC. SHAKEPROOF DIVISION	ST. CHARLES ROAD	ELGIN, IL 60120
80009	TEKTRONIX, INC.	P O BOX 500	BEAVERTON, OR 97077
83385	CENTRAL SCREW CO.	2530 CRESCENT DR.	BROADVIEW, IL 60153
87308	N. L. INDUSTRIES, INC., SOUTHERN SCREW DIV.	P. O. BOX 1360	STATESVILLE, NC 28677
93907	TEXTRON INC. CAMCAR DIV	600 18TH AVE	ROCKFORD, IL 61101
95987	WECKESSER CO., INC.	4444 WEST IRVING PARK RD.	CHICAGO, IL 60641

REPLACEABLE MECHANICAL PARTS

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number
1-1	333-1367-00		1						PANEL, FRONT:	80009	333-1367-00
-2	334-3663-01		1						MARKER, IDENT: MARKED CHANNEL VOLTAGE		
-3	214-1095-00		1						PIN, SPG, SPLIT: 0.094 OD X 0.187 INCH LONG	22599	52-022-094-0187
-4	366-1058-00		1						KNOB: LATCH	80009	366-1058-00
-5	105-0076-02		1						REL BAR, LATCH: PLUG-IN UNIT	80009	105-0076-02
-6	214-1280-00		1						SPRING, HLCPS: 0.14 OD X 1.126" L, 0.16" DIA W	80009	214-1280-00
-7	348-0235-00		1						SHLD GSKT, ELEC: 4.734 INCH LONG	80009	348-0235-00
-8	386-1447-47		1						SUBPANEL, FRONT:	80009	386-1447-47
									(ATTACHING PARTS)		
-9	213-0192-00		4						SCR, TPG, THD FOR: 6-32 X 0.50 INCH, PNH STL	87308	OBD
									- - - * - - -		
-10	386-1402-04		1						PANEL, REAR:	80009	386-1402-04
									(ATTACHING PARTS)		
-11	213-0192-00		3						SCR, TPG, THD FOR: 6-32 X 0.50 INCH, PNH STL	87308	OBD
-12	386-3657-01		1						SUPPORT, PLUG IN:	93907	OBD
									- - - * - - -		
-13	426-0505-07		1						FR SECT, PLUG-IN: TOP	80009	426-0505-07
									(ATTACHING PARTS)		
-14	220-0547-01		3						NUT, BLOCK: 0.38 X 0.25 X 0.282" OA	000FW	OBD
-15	211-0105-00		3						SCREW, MACHINE: 4-40 X 0.188" 100 DEG, FLH STL	83385	OBD
									- - - * - - -		
-16	214-1061-00		1						SPRING, GROUND: FLAT	80009	214-1061-00
-17	426-0499-07		1						FR SECT, PLUG-IN: BOTTOM	80009	426-0499-07
									(ATTACHING PARTS)		
-18	220-0547-01		3						NUT, BLOCK: 0.38 X 0.25 X 0.282" OA	000FW	OBD
-19	211-0105-00		3						SCREW, MACHINE: 4-40 X 0.188" 100 DEG, FLH STL	83385	OBD
									- - - * - - -		
-20	214-1054-00		1						SPRING, FLAT: 0.825 X 0.322, SST	80009	214-1054-00
-21	105-0075-00		1						BOLT, LATCH: 7A & 7B SER PL-IN	80009	105-0075-00
-22	337-1064-04		2						SHIELD, ELEC: SIDE PLUG-IN UNITS	80009	337-1064-00
-23	-----		1						CKT BOARD ASSY: PROGRAM		
									(ATTACHING PARTS)		
-24	211-0116-00		6						SCR, ASSEM WSHR: 4-40 X 0.312 INCH, PNH BRS	83385	OBD
									- - - * - - -		
-25	179-2806-00		1						WIRING HARNESS: MAIN	80009	179-2806-00
-26	131-0097-00		2						. CONNECTOR, RCPT: 32 CONTACT, FEMALE	02660	26-190-32
	-----		-						. (P1, P2 CONNECT TO J1, J2 ON REAR OF		
	-----		-						. UNIVERSAL LOAD UNIT)		
-27	213-0264-00		4						. SCREW, TPG, TC: 4-24 X 0.625, TYPE BT, PNH		
-28	166-0025-00		2						. SPACER, SLEEVE: 0.25 L X 0.125 ID, AL	71590	P07608-51
-29	200-0551-00		2						. COVER, PL-IN EXT: 3.895 X 2.125 X 0.987	80009	200-0551-00
-30	131-0293-00		1						. CONNECTOR, PLUG: 36 PIN CABLE PLUG, MALE	02660	57-30360
	-----		-						. (P3 CONNECTS TO J3 ON REAR OF UNIVERSAL		
	-----		-						. LOAD UNIT)		
-31	348-0004-00		1						. GROMMET, RUBBER: 0.281 ID X 0.563 INCH OD	70485	763
-32	131-0792-00		12						. CONNECTOR, TERM: 18-20 AWG, CU BE GOLD PL	22526	46221
-33	352-0200-00		1						. HLDR, TERM CONN: 4 WIRE BLACK	80009	352-0200-00
	-----		-						. (P74 CONNECTS TO J74 ON 4112 PS		
	-----		-						. REGULATOR BOARD)		
-34	352-0206-00		1						. HLDR, TERM CONN: 10 WIRE BLACK	80009	352-0206-00
	-----		-						. (P73 CONNECTS TO J73 ON 4112 PS		
	-----		-						. REGULATOR BOARD)		
-35	131-1563-00		4						. TERM, QIK DISC: FEMALE ACCOM 0.25 X 0.037	00779	61198-1
	-----		-						. (2, 8-0 TO J71; 8-2 TO J72)		
-36	343-0549-00		25						. STRAP, TIEDOWN: 0.091 W X 3.62 INCH LONG	59730	TY23M
-37	346-0128-00		1						. STRAP, TIE DOWN: 0.1W X 8.0" LONG, NYLON	59730	TY-232M
-38	-----		2						. STRAIN RELIEF		
									(ATTACHING PARTS)		
-39	212-0023-00		4						. SCREW, MACHINE: 8-32 X 0.375 INCH, PNH STL	83385	OBD
-40	210-0458-00		4						. NUT, PL, ASSEM WA: 8-32 X 0.344 INCH, STL	78189	511-081800-00
									- - - * - - -		
-41	343-0006-00		1						. CLAMP, LOOP: 0.50 INCH DIAMETER, PLSTC	95987	1-2-6B
									(ATTACHING PARTS)		
-42	212-0023-00		1						. SCREW, MACHINE: 8-32 X 0.375 INCH, PNH STL	83385	OBD
-43	210-0863-00		1						. WSHR, LOOP CLAMP: FOR 0.50" WIDE CLAMP, STL	95987	C191
-44	210-0458-00		1						. NUT, PL, ASSEM WA: 8-32 X 0.344 INCH, STL	78189	511-081800-00
									- - - * - - -		

REPLACEABLE MECHANICAL PARTS

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff Dscont	Qty	1	2	3	4	5	Name & Description	Mfr Code	Mfr Part Number
1-45	343-0001-00		1	.					CLAMP, LOOP: 0.15 INCH DIA, PLASTIC (ATTACHING PARTS)	95987	1-8-6B
-46	212-0023-00		1	.					SCREW, MACHINE: 8-32 X 0.375 INCH, PNH STL	83385	OBD
-47	210-0863-00		1	.					WSHR, LOOP CLAMP: FOR 0.50" WIDE CLAMP, STL	95987	C191
-48	210-0458-00		1	.					NUT, PL, ASSEM WA: 8-32 X 0.344 INCH, STL - - - * - - -	78189	511-081800-00
STANDARD ACCESSORIES											
	061-2393-00		1						MANUAL, TECH: INTRIM, INSTR	80009	061-2393-00

FIG. 1 EXPLODED VIEW

